

INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1997	Park: Shenandoah NP
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Name: George M. Hornberger Phone: n/a Email: n/a	
Permit#: SHEN1997AULX	
Park-assigned Study Id. #: unknown	
Project Title: Stream-Groundwater Interaction In A Saprolicite Aquifer (N-192)	
Permit Start Date: Jan 01, 1998	Permit Expiration Date Jan 01, 1998
Study Start Date: Jan 01, 1997	Study End Date Jan 01, 1997
Study Status: Completed	
Activity Type: Research	
Subject/Discipline: Water / Hydrology	
Objectives: <p>The dynamic relationships between precipitation, groundwater flow in the saturated and unsaturated zones, and streamflow remain poorly understood, despite some major advances in the past decade in our understanding of individual facets of interaction. All of these processes occur simultaneously, yet few studies to date have combined surface water observations (discharge, hydrograph separations, transient storage of water and solutes within the hyporheic zone) with groundwater observations (composition, water table variations). The objectives of the study are: > to conduct in-stream tracer tests using both conservative and non-conservative tracers within differing reaches; > to quantify the dynamics of stream-groundwater interaction through numerical modeling of experimental tracer data; > to examine water-table response within a saprolitic hillslope to precipitation events and use conservative chemical tracers (Cl-, 18/16O, and H/D) to separate storm hydrographs into "new" and "old" water components; and > to develop SUTRA simulations of the hydrograph and chemograph data from several storm events, and compare these simulations with observed stream discharge and chemistry. Once these objectives are met, the combination of surface and subsurface hydrologic data gathering and numerical simulation will increase our current understanding of water movement through catchments dominated by thick weathering profiles.</p>	
Findings and Status: <p>As of the beginning of 1998, the in-stream tracer tests have been completed. The next phase of the project will be to analyze stream hydrographs and chemographs from several storm events from the fall of 1997 and spring of 1998, and conduct numerical simulations of stream discharge and chemistry.</p>	
For this study, were one or more specimens collected and removed from the park but not destroyed during analyses? No	
Funding provided this reporting year by NPS: 0	Funding provided this reporting year by other sources: 0
Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	

Full name of college or university: n/a	Annual funding provided by NPS to university or college this reporting year: 0
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